COMMENTS TO PROPOSED RULE: OCCUPATIONAL EXPOSURE TO BERYLLIUM AND BERYLLIUM COMPOUNDS IN CONSTRUCTION AND SHIPYARD SECTORS

Submitted on Behalf of the Abrasive Blasting Manufacturers Alliance
Before the Department of Labor Occupational Safety and Health Administration (OSHA)
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I. INTRODUCTION

These comments are submitted on behalf of Abrasives Inc. ("Abrasives Inc."), CanAm Minerals, Inc. ("CanAm"), Harsco Corporation ("Harsco"), Mobile Abrasives, Inc. ("Mobile Abrasives") and Mineral Tech Gulf Coast Abrasives, LLC ("Mineral Tech"), individually and as members of the Abrasive Blasting Manufacturers Alliance ("ABMA"). The ABMA is a coalition that advocates for a fair regulatory framework for abrasive blasting based on sound principles of science and health, and it champions sensible regulations that protect worker health and environment, while still preserving the ability of abrasive manufacturers and blasters to operate efficiently.[1]

OSHA has reversed itself no fewer than three times during the rulemaking process on the issue of whether and how new beryllium standards should be applied to the construction and shipyard sectors. The ABMA, however, has been consistent throughout the rulemaking process in opposing any new beryllium standards for those sectors because there is no legal, scientific or medical basis for imposing new beryllium standards on construction and shipyards. The record contains no evidence of significant risk of harm to employees from the trace amounts of the naturally occurring mineral form of beryllium present in construction and shipyard work. Further, there is no evidence that the new proposed standards are "reasonably necessary or appropriate to reduce or eliminate" any significant risk of harm, which is the standard for promulgating a new workplace standard under the seminal case of *Industrial Union Dept., AFL-CIO v. American Petroleum Institute*, 448 U.S. 607, 644 (1980) (the "*Benzene*" case)(plurality opinion). As the *Benzene* test cannot be met here, no new standards should be imposed on the construction and shipyard sectors.

[1] A full description of the ABMA and the above companies is set forth in the ABMA's prior comments submitted with regard to this rulemaking process at Document ID 1673, at pp. 1-3, and Document ID 2142, at pp. 4-6.

II. THERE IS NO BASIS FOR IMPOSING NEW BERYLLIUM STANDARDS ON THE CONSTRUCTION AND SHIPYARD SECTORS

A. Recent History of Beryllium Rulemaking Shows Many Reversals of Positions by OSHA, but No Evidence to Support the Proposed Standards

In August 2015, OSHA filed a proposed rule directed to regulating beryllium exposure in general industry. It did not cover construction or shipyards. Indeed, OSHA acknowledged that information and data on beryllium exposure outside of general industry is "limited." (80 FR 47774). Still, OSHA invited comment on whether the rule should be extended to construction and shipyards. (80 FR 47566). ABMA submitted comments opposing such extension. (https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-1673) (Document ID 1673).

In January 2017, OSHA published a final rule on beryllium which reversed course and applied not only to general industry, but to construction and shipyards also, despite receiving no credible evidence to support doing so. (82 FR 2470).

Shortly after the January 2017 final rule was published, various groups and companies, including ABMA members Harsco and Mobile Abrasives, sued OSHA to challenge the final rule. All suits were eventually consolidated in the Eighth Circuit Court of Appeals. Several of the suits, including those by Harsco and Mobile Abrasives, specifically challenged the construction and shipyard portions of the January 2017 final rule.

About six months thereafter, OSHA changed direction again and filed a June 2017 notice of proposed rulemaking ("NPRM"), which proposed to revoke the "ancillary provisions" of the January 2017 final rule for construction and shipyards, but still keep the new PEL and STEL for those sectors. (82 FR 29182). The ABMA filed comments agreeing with the revocation of the ancillary provisions, but also maintaining that there is no basis for the new PEL and STEL in

construction and shipyards, among other arguments. (https://www.regulations.gov/document?D=OSHA-H005C-2006-0870-2142) (Document ID 2142).

As elimination of the so-called ancillary provisions would address a number of the arguments made by Harsco, Mobile Abrasives and the other construction and shipyard petitioners in the Eighth Circuit litigation, those petitioners and OSHA agreed to stay the 8th Circuit proceedings pending OSHA's completion of this rulemaking process. That stay remains in place at present, but the litigation could resume again in full force depending on what happens with the most recent proposed rulemaking.

In March 2018, OSHA published a memorandum stating that no parts of the January 2017 final rule except for the new PEL and STEL would be enforced for the construction and shipyards sectors, without additional notice. (https://www.osha.gov/laws-regs/standardinterpretations/2018-03-02).

On September 30, 2019, OSHA reversed direction again and, citing to no new scientific, medical or other evidence, published a final rule stating that it was no longer adopting the portion of the June 2017 NPRM that would have revoked the ancillary provisions for construction and shipyards, that OSHA was now delaying the compliance deadlines of nearly all of the provisions of the construction and shipyards standards until September 30, 2020, and that OSHA would be publishing a new proposal for construction and shipyards. (84 FR 51377).

On October 8, 2019, OSHA issued a proposed rule that seeks to keep nearly all of the ancillary provisions applicable to the construction and shipyards beryllium standards, with some modifications. (84 FR 53902). Please note that what OSHA references as "ancillary" provisions are actually critically important as they are provisions that are very expensive and onerous for employers, yet would add no additional protection for construction and shipyard workers.

Under the *Benzene* test, the Secretary is required to determine that a proposed OSHA standard is "reasonably necessary and appropriate to remedy a significant risk of material health impairment" before issuing that standard. *Benzene*, 448 U.S. at 715 (1980). The Secretary is therefore required to "make a threshold finding that a place of employment is unsafe – in the sense that significant risks are present and can be eliminated or lessened by a change in practice." *Id.* at 642.

The rulemaking record is entirely devoid of such evidence. This is demonstrated by OSHA's own stated findings:

- OSHA has noted that information and data on beryllium exposure outside of general industry is "limited". 80 FR 47774.
- OSHA has found that the hazards inherent in abrasive blasting (the subject of OSHA's focus on beryllium in construction and shipyards) are already effectively controlled through a number of pre-existing standards. 82 FR 29183, 29221-29222.
- Employees are already required by pre-existing standards to use the same effective respiratory protection that would be required by the new standard. 82 FR 29221-29222.

The total absence of scientific, medical or epidemiologic support for extending the new beryllium regulations to the construction and shipyard sectors is particularly clear and profound. This point is highlighted by the expert reports of Renee M. Kalmes, CIH of Exponent (the "Exponent Report"), and Howard M. Sandler, M.D. of Sandler Occupational Medicine Associates, Inc. (the "SOMA Report"), which are attached to the ABMA's comments to the June 2017 NPRM. (Document ID 2142, at Attachments 1 and 2).

The Exponent and SOMA Reports consist of separate and independent reviews of the literature and studies cited by OSHA as supposedly supporting extending the beryllium standards

to construction and shipyards. Significantly, the Exponent Report, at p.1, finds that "[t]here is no empirical evidence in the form of epidemiology, research studies, or health hazard evaluations in the record that demonstrates that exposure to materials containing trace amounts of beryllium, such as those found in abrasive blasting materials, results in clinical CBD [chronic beryllium disease], the detection of beryllium sensitization or lung cancer." Likewise, the SOMA Report, at p. 7, finds that "there is no epidemiological evidence that mineral beryllium workplace exposures cause CBD as a result of abrasive blasting or welding in those [construction and shipyard] industries."

The ABMA is not aware of any studies or articles published since the filing of the Exponent and SOMA Reports which would contradict their findings. Nor has OSHA discussed any new studies or articles in its most recent final and proposed rules where OSHA reverses itself again and seeks to add the ancillary provisions back into the construction and shipyard beryllium standards. The absence of such scientific, medical and epidemiologic evidence demonstrates that OSHA cannot meet the required *Benzene* test for promulgating beryllium standards for construction and shipyards.

B. Extrapolating Data from General Industry is Inappropriate and Unjustified.

OSHA does not dispute that there is an absence of data and studies showing adverse health effects specifically from beryllium exposures from abrasive blasting in the construction and shipyards sectors. Rather, OSHA seeks to impose new beryllium standards on construction and shipyards by extrapolating the evidence of harmful effects from exposures to forms of beryllium in general industry to exposures in construction and shipyards. (*See* 82 FR 29187 and 29221). This is inappropriate and unjustified for many reasons. It ignores that these industries involve different types of beryllium, different exposure levels and durations of exposures, and

different conditions under which employees are exposed. And all of these differences must be taken into account. Conflating them is just bad science and factually erroneous.

1. Background on Beryllium in Construction and Shipyards

OSHA has found that exposures to beryllium in construction and shipyards are limited primarily to abrasive blasting and some welding operations. 84 FR 53906. Abrasive blasting involves exposure to only trace amounts of the naturally occurring mineral form of beryllium. Final Economic Analysis, OSHA-H005C-2006-0870-2042 ("FEA"), IV-16. Abrasive blasting media does not include beryllium alloys or beryllium oxides. *See* FEA, IV-16.

Abrasive blasting involves potential exposure to air contaminants from two primary sources: the blasting media being used, and the surface(s) worked upon. FEA, IV-612. Beryllium is found only in trace amounts in both sources. As an example, in coal slag products, the percentage of beryllium by weight ranges from 0.000028% to 0.00063%. FEA IV-612. Copper slag similarly contains only trace amounts of beryllium, with samples ranging from 0.448 to 1.45 µg/gm, or 0.0002% percentage by weight. FEA IV-612. By way of contrast, beryllium in some beryllium alloy materials utilized in some general industry applications contain approximately 17,000 to 22,000 times more beryllium by weight than typical coal and copper slag products. (*See, e.g.*, Materion Brush, Inc. Safety Data Sheet for "Copper Beryllium Master Alloy").[2]

The ABMA companies manufacture and sell a variety of blast media, including aluminum oxide, garnet, crushed glass, glass bead and even walnut shell, as well as coal and copper slags. We specifically reference slag based media here because OSHA has specifically done so. *See* 82 FR 29189. It is critically important to note, however, that the beryllium standards being

[2] Available at http://materion.com/ResourceCenter/EnvironmentalHealthandSafety/MSDS.aspx?filename=%5C%5Cmtrn-shared01%5CENTERPRISE%5CMSDGenDocumentation%5CA17_COPPER%20BERYLLIUM%20MASTER%2 0ALLOY_SDS-US_English.pdf

proposed by OSHA for construction and shipyards would apply to all abrasive blasting operations, regardless of what type of blasting media is used, and that virtually all blast media and many of the surfaces that are blasted contain trace amounts of beryllium. 82 FR 29190, citing Burgess 1991, Document ID 0907.

Indeed, OSHA's rulemaking file includes references to one of the few studies showing comparative data for airborne sampling during abrasive blasting with multiple types of abrasive media. (NIOSH/KTA-Tator, Inc. 1998-99 Study, *Evaluation of Substitute Materials for Silica Sand in Abrasive Blasting*, at Document IDs 0768, 0769 and 1642). The sampling results of this study show that most types of blast media tested, including crushed glass and garnet, coal, copper and nickel slag, olivine, and staurolite and silica sand, had one or more beryllium readings at or above the current action level of 0.1 micrograms per cubic meter. (*See* highlighted results in the study's summary chart of air sampling results for beryllium at Document ID 2169, Attachment 2). This is consistent with the beryllium content testing conducted by Exponent and reported in January and February of 2018, which showed beryllium present in all types of blast media analyzed, including garnet, glass, sand and aluminum oxide. (Document ID 2169, Attachments 1 and 3). Thus, because beryllium is present in most types of blast media, and can also be present in the surfaces being blasted, every blasting job can potentially involve the new beryllium standards proposed by OSHA, particularly given the newly lowered PEL, STEL and action level. Therefore, focusing on slag media alone is inappropriate and misleading to employers, employees and the public.[3]

[3] Also, as noted in the ABMA's August 2017 comments to OSHA's June 2017 NPRM, OSHA's focus on slag media has led to some inappropriate advertising claims that abrasive blasting with non-slag media, such as glass or garnet, is supposedly "safe" and/or presents "no hazard." (Document ID 2142, at p. 8, with an example of an inappropriate advertisement at Attachment 3 thereof). Such claims are wrongfully misleading as OSHA has long recognized that abrasive blasting with any media can expose workers to high dust levels and to various hazardous substances from various sources (82 FR 29190; FEA IV-612).

2. The Type of Beryllium Matters.

The type of beryllium to which employees are exposed is also critically important. As noted in the SOMA Report, there is no evidence showing a causal link between the insoluble mineral form of beryllium found in blasting abrasives in construction and shipyards and lung cancer. (Document ID 2142, at Attachment 2, p. 7). Moreover, as further noted by SOMA, OSHA did not include a "weight of the evidence evaluation" in determining beryllium lung-cancer risk. (*Id.* at p. 5.) Among the items OSHA should have evaluated include the lack of separation between soluble and insoluble beryllium the failure to exclude pre-1955 exposure data, and the failure to adequately account for the smoking population. *Id.* As further noted by SOMA, OSHA also failed to adequately consider several studies which looked at the overall evaluations of the scientific evidence, which failed to find sufficient evidence of a causal association of beryllium lung cancer in humans. *Id.*

Similarly, with regard to CBD, there is a lack of evidence showing any disease connection associated with the mineral form of beryllium present in abrasive blasting. As noted in the Exponent Report, the 16 epidemiological studies cited by OSHA as the basis for concluding a risk of BeS or CBD do not report the mineral form of beryllium as a causative agent. (Document ID 2142, Attachment 1 at p.1). Rather, there is a complete lack of evidence demonstrating that exposure to abrasive blasting material with trace amounts of beryllium results in clinical CBD. *Id.* This finding is also confirmed by the literature review conducted by SOMA. (Id., Attachment 2 at pp. 6-7). As noted in the SOMA Report, there are no published epidemiological studies linking CBD with beryllium exposures from abrasive blasting. (*Id*. at p. 7).

3. The Conditions of Exposure Matter.

The conditions of exposure also matter. As one example, beryllium alloy production involves melting beryllium hydroxide into beryllium oxide powder, and then combining that with

other materials to create pellets. FEA IV-47. These are then put into a furnace and turned into a copper-beryllium "master alloy" that is 3.8 percent beryllium by weight, which is then cast into larger "billets." *Id.* As another example, with beryllium oxide ceramics, pure beryllium powder is turned into beryllium ceramic powders by mixing, screening, blending, and treating the pure beryllium powder. FEA, IV-127. Exposures occur primarily with the material preparation operators, who transfer the pure beryllium powder into mixing equipment. *Id.* at IV- 128. In contrast, abrasive blasting involves blasting abrasive material against a surface to clean etch, or remove paint. *Id*. at IV-610. Beryllium is, itself, not a blasting media, but is present in only trace amounts (typically less than 0.001% by weight) in such media. *Id*. at IV-612.

4. The Level and Duration of Exposure Matter.

As noted above, abrasive blasting involves levels of exposure that are many thousands of times lower than exposures found in some of the general industry work studied and relied upon by OSHA, and the duration of exposure is typically less. In beryllium metal production, for example, the process results in beryllium pebbles that are 98% pure beryllium, and in beryllium alloy production involves exposure to a copper beryllium alloy containing 3.8% beryllium by weight. FEA IV-45, 47. Further, a full-shift sample in primary beryllium production is defined as having duration of at least 360 minutes. All of the samples used in the exposure profile by OSHA had durations of at least 400 minutes. FEA, IV-56. In comparison, in abrasive blasting, a full shift is defined as only 240 minutes. *Id*. All of this makes comparison between different industries and work activities scientifically unjustified.

C. The Ancillary Provisions Should Be Revoked from the Construction & Shipyard Standards, as OSHA Previously Proposed.

OSHA's October 8, 2019 NPRM proposes to keep the ancillary provisions in the construction and shipyard beryllium standards, subject to certain modifications. The ancillary

provisions, however, should be revoked in their entirety, just as OSHA had previously proposed in its June 27, 2017 NPRM (82 FR 29182).

Significantly, OSHA does not cite to any new studies or evidence to explain its about-face. OSHA's only stated reason for reversing its earlier decision to revoke the ancillary provisions is that it has subsequently concluded "that other OSHA standards do not duplicate the requirements of the ancillary provisions in the beryllium standards for construction and shipyards in their entirety." (84 FR 51377). Of course, this explanation begs the question whether the ancillary provisions are "reasonably necessary or appropriate to reduce or eliminate" a "significant risk of health impairment" for which existing standards are inadequate to protect workers – the standard for promulgating a new safety standard under the *Benzene* case, 448 U.S. at 642, 644.

Here, there is no evidence that the ancillary provisions are necessary to protect construction and shipyard workers from a significant risk of harm. There is no evidence that the pre-existing standards governing abrasive blasting are insufficient to protect employees, and there is no evidence that exposure to the trace amounts of naturally occurring beryllium in abrasive blasting (or welding) has resulted in any material impairment of health to employees in all of the many years this work has been performed.

In this regard, the ABMA references and incorporates its prior comments of November 5, 2015 (Document ID 1673) and August 28, 2017 (Document ID 2142) submitted during this rulemaking process, including the following points:

- In their combined 200 years of operation, the ABMA member companies are unaware of any documented occurrences of beryllium sensitization, CBD or lung cancer among their own employees or their customers' employees (Document ID 1673, at p. 9);

- There are more than 24 existing OSHA standards already governing the protection of employees in abrasive blasting operations (*id*. at pp. 19-20);

• OSHA itself has recognized and acknowledged the many existing standards that govern protection of employees from beryllium in construction and shipyards (Document ID 2142, at pp. 9-10, citing 82 FR 29221-29222);

• Abrasive blaster operators are already required to wear full PPE when performing blasting (*id*. at p. 10, citing 82 FR 29197);

• According to OSHA's own Final Economic Analysis (FEA), the majority of pot tenders and clean-up workers experience exposures well below the final PEL of 0.2 micrograms per cubic meter (*id*., citing FEA IV-642); and

• There are no epidemiology studies, research studies or health hazard evaluations in the record that demonstrate that exposure to abrasive blasting materials containing trace amounts of the mineral form of beryllium results in beryllium sensitization, CBD or lung cancer (Document ID 2142, Attachments 1 and 2, the Exponent and SOMA Reports).

The so-called "ancillary" provisions consist of the most onerous and expensive provisions of the proposed standards. They include the provisions for exposure assessments, regulated areas, methods of compliance, respiratory protection, personal protective clothing and equipment, hygiene areas and practices, housekeeping, medical surveillance, medical removal, communication of hazards, and recordkeeping requirements. The proposed medical surveillance provisions are particularly complex, detailed and costly, and also potentially invasive and burdensome for the employees. Where, as here, the *Benzene* test cannot be met to support these provisions, revocation is the appropriate and required result.

As the ABMA believes that the ancillary provisions should be revoked in their entirety, we will not go into a separate discussion here of OSHA's proposed modifications to individual provisions, and the ABMA instead asserts a general objection to including any of the ancillary provisions in the construction and shipyard beryllium standards. Still, we note, by way of example,

that OSHA is proposing to modify the ancillary provisions to remove those provisions triggered by “dermal contact” (84 FR 53906), and is also proposing to remove the term “emergency” from the ancillary provisions on the basis that the construction and shipyards industries “do not have emergencies in which exposures to beryllium will differ from the normal conditions of work.” (84 FR 53909). While the ABMA does not disagree with these two proposals to remove provisions, it remains the ABMA’s position that all of the ancillary provisions should be revoked and removed from the construction and shipyards standards.